

Trend Study 8B-7-00

Study site name: Antelope Flat .

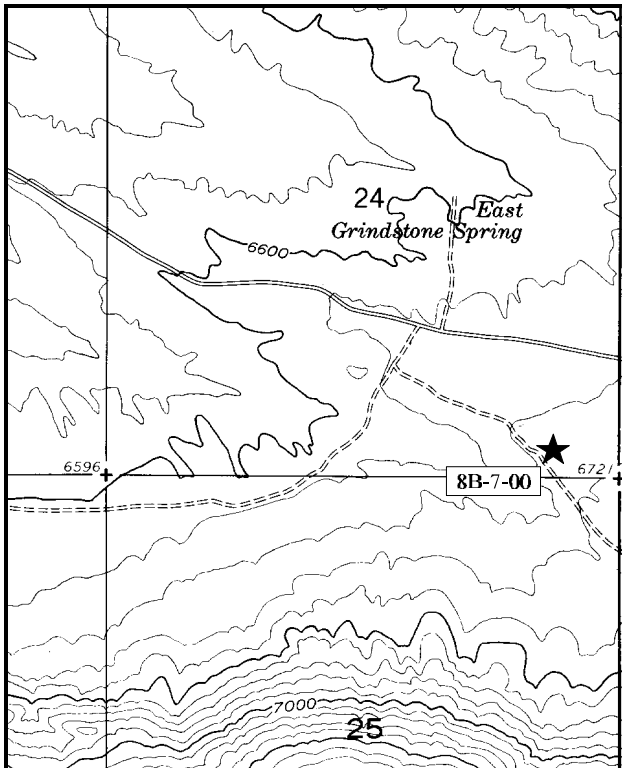
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 165°M.

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft). Belt 2 rebar @ 1ft.

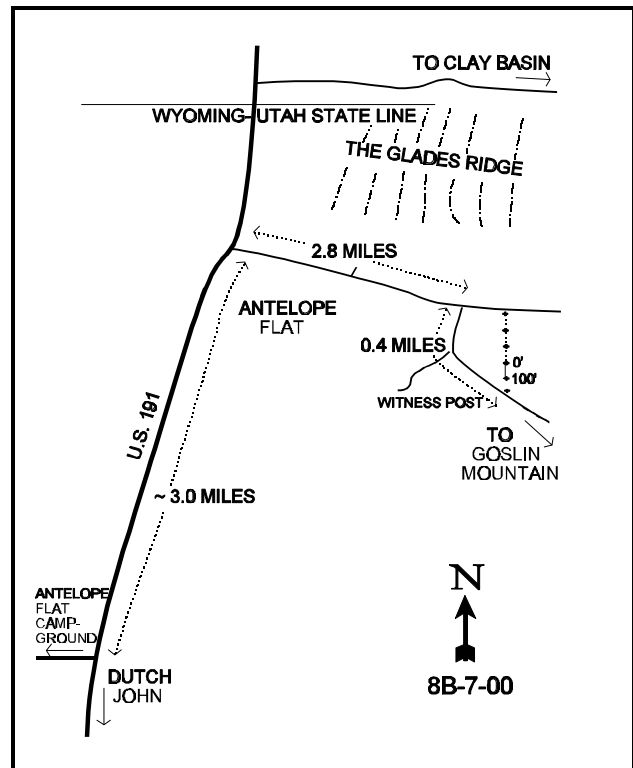
LOCATION DESCRIPTION

From Dutch John, proceed north towards Antelope Flat on Highway U.S. 191 for approximately 8 miles. Before the Wyoming border, turn east on the Antelope Flat Road towards Goslin Mountain. Go 2.8 miles and turn right towards Goslin Mountain. Go 0.1 miles to a fork. Bear left on the main fork towards the mountain and proceed 0.3 miles to a witness post on the north side of the road. From the witness post walk approximately 100 feet (22 paces) north into the sagebrush to the 100-foot end of the baseline. The 0-foot end of the frequency baseline is 100 feet north.



Map Name: Dutch John

Township 3N, Range 22E, Section 24



Diagrammatic Sketch

UTM 4537316.266 N, 636375.882 E

DISCUSSION

Trend Study No. 8B-7 (9-10)

This trend study was established on Antelope Flat in September of 1988. The long sagebrush covered valley stretches from Flaming Gorge Reservoir, east to Goslin Mountain. The study is located at the base and north side of Dutch John and Goslin Mountains at an elevation of 6,650 feet. The slope is gentle (2-3%) with a northwest aspect. Deer and antelope can be found in the valley year round, while elk from Goslin Mountain also utilize the lower valleys as winter range. Pellet group data from 2000 estimate 22 elk, 7 deer and 9 cow days use/acre (54 edu/ha, 17 ddu/ha, and 22 cdu/ha). Approximately half of the elk pellet groups appeared to be from the previous fall, while the other half were from the spring of 2000. Deer pellet groups were all from winter use. Approximately 90% of the cattle pats were from the previous fall while about 10% were fresh. There were some cattle in the area when the site was read on July 6th 2000, but they should be moving further up the mountain soon. Cattle graze this allotment on a deferred rotation system. They are on the unit either early (May 1 to July 20) or late (September 5-November 20) in the season. Cattle use was light in 1995, likely due to prolonged drought and the distance from water. Utilization was light to moderate in 2000. Rabbits appear to be abundant on this site (see pellet group table). A few antelope and sage grouse also use the area.

The soil would appear to be moderately deep, but compacted below in the sub-surface horizons. A clay hardpan is found at approximately 9-10 inches in depth. As a result, effective rooting depth is estimated at only about 10 inches. The surface layer is a sandy loam with a neutral pH. Very little rock or gravel are on the surface or within the profile. Consequently, it is more susceptible to wind and water erosion. Phosphorus is limited at only 4.9 ppm. Values less than 10 ppm can limit normal plant growth and development. Percent cover of bare ground is moderately high with most occurring in the shrub interspaces. Cover is a relatively high for cryptogams which covered 6% of the soil surface in 1988, increasing to nearly 8% by 1995 and down to 5% in 2000. This along with the vegetative and litter cover, combined with the gentle terrain, adequately protect the soil from severe erosion.

The site supports a moderately dense stand of Wyoming big sagebrush which had an estimated density of 7,200 plants/acre in 1988 and 5,620 by 1995. The change in density comes primarily from a reduction in the proportion of decadent plants in the population which declined from 3,400 plants/acre in 1988 to 1,220 by 1995. The number of mature sagebrush actually increased from 2,800 to 3,820 plants/acre. During the 1988 reading, 47% of the sagebrush was classified as decadent with 43% of the population displaying heavy use. Vigor was generally good but annual growth was low (<1") with the average mature plant measuring 15" in height with a crown measurement of 17".

During the 1995 reading, 35% of the sagebrush displayed heavy use. Vigor was generally good with percent decadency declining to 22%. One noted downward trend was that the percentage of the decadent plants which were classified as dying (>50% crown death) had increased from 8% in 1988 to 31% in 1995. Photos showed an improvement in annual growth due to the wet spring of 1995. Average height and crown measurements increased respectively that year to 18 x 32 inches. Reproductive potential and the number of young plants declined, but they were still acceptable at 1% and 10% respectively. Density remained stable in 2000, but percent decadence increased to 46% with about 36% of the decadent sagebrush classified as dying. Use was only light to moderate, indicating that the increase in decadence was primarily due to drought. Because of the dry conditions in 2000, many of the sagebrush were already dropping their leaves during the first week of July. Reproduction in the form of seedlings and young would be considered marginal and not enough to maintain the population if conditions do not improve. These trends are primarily being driven by the prolonged drought in conjunction with intraspecific competition. Trends will improve with a return to normal or near-normal precipitation patterns.

Mountain low rabbitbrush is also numerous with an estimated density of 7,199 plants/acre in 1988 and 6,000 by 2000. These shrubs are mostly not utilized and in good vigor. Small numbers of slenderbush eriogonum, snakeweed and prickly pear were also encountered on the site.

Grasses and forbs are diverse and fairly abundant for a Wyoming big sagebrush site. Most are found growing in close proximity to sagebrush plants. The most abundant grasses include Sandberg bluegrass, mutton bluegrass and thickspike wheatgrass. A variety of forbs are found on the site but most are uncommon. The most numerous perennial forbs include: hoods phlox, longleaf phlox and Eaton fleabane. Several annual forbs are also found on the site.

1988 APPARENT TREND ASSESSMENT

The site has 46% litter cover and 10% basal vegetative cover. Although the shrub interspaces are well vegetated for this range type, there is a significant amount of bare ground (37%). The browse trend appears to be declining due to heavy use and a high decadency rate (47%). Recruitment appears good however with abundant seedlings and young. The herbaceous understory is fairly abundant for a Wyoming sagebrush site.

1995 TREND ASSESSMENT

Basic ground cover characteristics have improved since 1988. Even though percent litter cover declined slightly, cover of cryptogams increased, and percent cover for bare ground decreased to 26%. Trend for soil is up slightly. The browse trend is stable. The key browse species, Wyoming big sagebrush, has declined in overall density but shows less heavy use and an improving rate of decadency (47% to 22%). The population could decline further because 380 decadent plants/acre are classified as dying. However, there appears to be a sufficient number of young plants (580/acre) to replace them. The herbaceous trend is slightly down due to a decline in the sum of nested frequency of perennial grasses and forbs. Annual forbs were sampled in 1995. They dominated the forb composition by providing 71% of the forb cover.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3)

herbaceous understory - slightly down (2)

2000 TREND ASSESSMENT

Trend for soil is down slightly. Relative percent cover of bare ground has increased slightly, while cover of cryptogams has declined slightly. Relative percent cover of litter has declined slightly with relative cover for vegetation increasing slightly since 1995. In addition, the proportion of protective ground cover (vegetation, litter and cryptogams) to bare ground has declined slightly from 2.9:1 to 2.7:1. Trend for browse is down slightly due to an increase in percent decadence of Wyoming big sagebrush from 22% to 46%. In addition, 36% or 960 plants/acre of the decadent sagebrush were classified as dying. Recruitment from young plants is currently marginal at 8%. Use is actually more moderate compared to 1995, indicating that these trends are being driven more by drought. A return to normal precipitation patterns will reverse these downward browse trends. Trend for the herbaceous understory is stable. Sum of nested frequency for perennial grasses and forbs have remained similar to 1995. Nested frequency for cheatgrass, an annual, increased significantly while frequency of all annual forbs declined.

TREND ASSESSMENT

soil - down slightly (2)

browse - down slightly (2)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 08B, Study no: 7

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	238	190	158	89	71	59	.83	2.54
G	Agropyron spicatum	_a 18	_b 110	_a 22	6	42	9	.61	.32
G	Bromus tectorum (a)	-	_a 66	_b 120	-	27	41	.50	2.74
G	Carex spp.	_b 9	_a -	_{ab} 3	4	-	1	-	.03
G	Koeleria cristata	_c 55	_a -	_b 36	24	-	13	-	.62
G	Oryzopsis hymenoides	13	20	12	6	10	7	.20	.25
G	Poa fendleriana	_a 5	_b 32	_c 113	2	13	45	.43	2.86
G	Poa secunda	184	159	173	75	58	66	3.00	1.90
G	Sitanion hystrix	_b 67	_a 34	_a 35	33	19	14	.30	1.06
G	Stipa comata	_c 87	_b 31	_a 5	37	16	2	.28	.03
G	Vulpia octoflora (a)	-	1	3	-	1	1	.00	.01
Total for Annual Grasses		0	67	123	0	28	42	0.50	2.75
Total for Perennial Grasses		676	576	557	276	229	216	5.65	9.63
Total for Grasses		676	643	680	276	257	258	6.17	12.39
F	Agoseris glauca	_a -	_b 22	_a 1	-	10	1	.05	.01
F	Allium spp.	_{ab} 4	_b 11	_a -	2	6	-	.04	-
F	Antennaria rosea	_c 62	_a 1	_b 28	26	1	12	.00	.54
F	Arabis spp.	9	10	7	4	5	3	.02	.01
F	Astragalus convallarius	31	23	29	12	12	14	.25	.28
F	Collinsia parviflora (a)	-	_b 57	_a 24	-	21	8	.25	.14
F	Cordylanthus ramosus (a)	-	_b 187	_a 57	-	73	24	6.05	.27
F	Crepis acuminata	-	3	-	-	1	-	.00	-
F	Cymopterus longipes	_a 15	_a 15	_b 34	7	7	17	.03	.26
F	Descurainia pinnata (a)	-	3	-	-	1	-	.00	-
F	Erigeron eatonii	_a 7	_a 19	_b 47	4	11	23	.08	.51
F	Eriogonum umbellatum	-	-	3	-	-	1	-	.03
F	Gayophytum ramosissimum (a)	-	_b 17	_a -	-	6	-	.03	-
F	Gilia inconspicua (a)	-	_b 10	_a 1	-	4	1	.02	.00
F	Lepidium spp. (a)	-	3	-	-	1	-	.00	-
F	Lomatium spp.	_a -	_a -	_b 5	-	-	3	-	.06
F	Machaeranthera canescens	-	5	-	-	2	-	.03	-
F	Microsteris gracilis (a)	-	_b 118	_a 40	-	40	16	.42	.08
F	Penstemon humilis	_b 60	_b 54	_a 24	28	25	12	.45	.11
F	Phlox hoodii	_b 139	_a 95	_a 90	68	44	39	1.23	2.40
F	Phlox longifolia	_b 153	_a 97	_a 82	66	41	32	.22	.31
F	Polygonum douglasii (a)	-	_b 45	_a 7	-	19	3	.09	.01

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
F	Ranunculus testiculatus (a)	-	-	3	-	-	1	-	.00
F	Schoenecrambe linifolia	_a -	_b 12	_b 5	-	5	3	.02	.04
F	Sphaeralcea coccinea	40	26	26	16	11	13	.18	.31
F	Trifolium gymnocarpon	_a -	_b 55	_c 74	-	25	33	.15	.49
Total for Annual Forbs		0	440	132	0	165	53	6.88	0.51
Total for Perennial Forbs		520	448	455	233	206	206	2.79	5.37
Total for Forbs		520	888	587	233	371	259	9.67	5.89

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 08B, Study no: 7

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia tridentata wyomingensis	97	100	16.13	19.50
B	Chrysothamnus viscidiflorus viscidiflorus	90	89	5.16	6.06
B	Eriogonum microthecum	2	4	.01	.04
B	Gutierrezia sarothrae	1	8	-	.09
B	Opuntia polyacantha	18	20	.36	.84
Total for Browse		208	221	21.67	26.54

BASIC COVER --

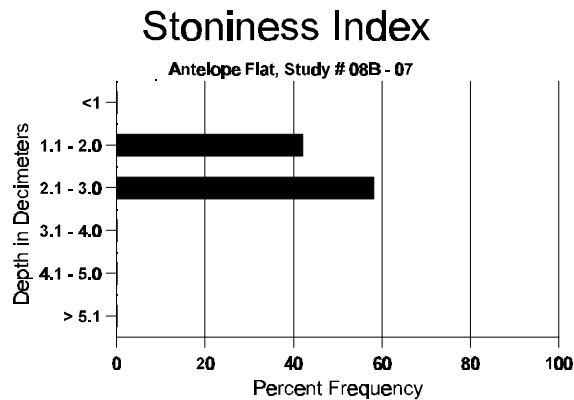
Herd unit 08B, Study no: 7

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	348	345	10.25	36.86	47.01
Rock	64	4	0	.19	.01
Pavement	150	75	1.00	.55	.36
Litter	394	371	45.50	42.59	46.87
Cryptogams	207	118	6.00	7.77	5.06
Bare Ground	328	305	37.25	26.36	35.77

SOIL ANALYSIS DATA --

Herd Unit 8B, Study # 7, Study Name: Antelope Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
9.98	68.8 (9.92)	7.0	65.4	17.0	17.6	1.7	4.9	118.4	0.8



PELLET GROUP FREQUENCY --

Herd unit 08B, Study no: 7

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre 00	Days Use per Acre (ha) 00
Rabbit	8	4	-	-
Elk	5	5	287	22 (55)
Deer	38	1	87	7 (17)
Antelope	-	-	9	1 (2)
Sage Grouse	-	-	26	N/A
Cattle	1	1	113	9 (23)

BROWSE CHARACTERISTICS --

Herd unit 08B, Study no: 7

Artemisia tridentata wyomingensis																		
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
S	88	6	-	-	2	-	-	-	-	-	8	-	-	-	533		8	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	88	9	5	1	-	-	-	-	-	-	14	1	-	-	1000		15	
	95	19	6	2	2	-	-	-	-	-	29	-	-	-	580		29	
	00	21	1	-	-	-	-	-	-	-	20	-	2	-	440		22	
M	88	2	16	24	-	-	-	-	-	-	41	1	-	-	2800	15 17	42	
	95	3	99	59	-	12	18	-	-	-	191	-	-	-	3820	18 32	191	
	00	100	30	3	2	-	-	-	-	-	134	-	1	-	2700	19 31	135	
D	88	12	18	21	-	-	-	-	-	-	43	2	2	4	3400		51	
	95	4	25	9	-	10	11	2	-	-	42	-	-	19	1220		61	
	00	93	33	8	-	-	-	-	-	-	79	-	7	48	2680		134	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	620		31	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	760		38	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		36%			43%			06%			-22%							
'95		54%			35%			07%			+ 3%							
'00		22%			04%			20%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	7200	Dec:	47%			
												'95	5620		22%			
												'00	5820		46%			
Ceratoides lanata																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3 7	0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Chrysothamnus viscidiflorus viscidiflorus																	
S	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	95	1	2	-	-	-	-	-	-	-	3	-	-	-	60		3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	88	17	3	1	2	-	-	-	-	-	23	-	-	-	1533		23
	95	32	1	-	3	-	-	-	-	-	36	-	-	-	720		36
	00	15	-	-	-	-	-	-	-	-	15	-	-	-	300		15
M	88	30	5	-	4	-	-	-	-	-	39	-	-	-	2600	9 8	39
	95	224	4	1	24	-	-	-	-	-	251	-	-	2	5060	10 16	253
	00	237	-	-	4	-	-	4	-	-	233	1	11	-	4900	9 15	245
D	88	23	12	9	2	-	-	-	-	-	37	-	9	-	3066		46
	95	3	-	-	-	-	-	-	-	-	2	-	-	1	60		3
	00	36	-	-	3	-	-	1	-	-	26	-	6	8	800		40
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		19%			09%			08%			-19%						
'95		02%			.34%			01%			+ 3%						
'00		00%			00%			08%									
Total Plants/Acre (excluding Dead & Seedlings)												'88	7199	Dec:	43%		
												'95	5840		1%		
												'00	6000		13%		
Eriogonum microthecum																	
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	6 8	3
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5 4	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			00%									
'95		00%			00%			00%			+25%						
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-		
												'95	60		-		
												'00	80		-		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Gutierrezia sarothrae																	
S	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	88	14	-	-	-	-	-	-	-	-	13	-	1	-	933	5 4	14
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	9 13	1
	00	23	-	-	1	-	-	-	-	-	24	-	-	-	480	5 7	24
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			07%			-98%						
'95		00%			00%			00%			+96%						
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'88	999	Dec:	-		
												'95	20		-		
												'00	480		-		
Opuntia polyacantha																	
S	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	88	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
M	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333	4 7	5
	95	27	-	-	-	-	-	-	-	-	27	-	-	-	540	3 12	27
	00	22	-	-	-	-	-	-	-	-	22	-	-	-	440	4 9	22
D	88	3	-	-	-	-	-	-	-	-	2	-	-	1	200		3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	3	-	-	-	-	-	-	-	-	-	-	-	3	60		3
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			08%			-30%						
'95		00%			00%			00%			- 7%						
'00		00%			00%			12%									
Total Plants/Acre (excluding Dead & Seedlings)												'88	799	Dec:	25%		
												'95	560		0%		
												'00	520		12%		